

STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

FROM

(MARCH 7<sup>TH</sup> 2022 TO AUGUST 26<sup>TH</sup> 2022)

AT

INTERSWITCH

1 OKO-AWO STREET, VICTORIA ISLAND, LAGOS, NIGERIA



A TECHNICAL REPORT

BY

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SUBMITTED TO

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## **DEDICATION**

I dedicate this report firstly to my Father and Friend, without whom I would not be here today, for only His grace, love and mercy have seen me through the SIWES internship program; for that and more, He deserves all the glory.

Furthermore, I dedicate this to my beloved parents, Mr. and Mrs. Ajewole, for their unending support, love, and guidance.

This report is also dedicated to Covenant University for the various enviable platforms and pedestals they allow their students to leverage for their success and this graciously excellent opportunity to have real work experience.

Finally, I would like to dedicate this report to the entire Technology department of Interswitch, most especially the Technical Support team. My team lead, Mr. Victor Ogbo, for his patience and outstanding leadership, and my entire team who taught me so much and gave me an awesome experience at Interswitch.

## **ACKNOWLEDGEMENT**

Despite the fact that this internship was a success, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

First and most important, I acknowledge the Almighty God, my Father in Heaven for His mercy, His eternal favour, and abiding grace to start and finish my internship. Without Him, my internship experience would never have been possible.

I am grateful to my parents who provided me with unending guidance and support throughout. I also wish to express my sincere gratitude to my parents, friends, and family who supported me during the internship.

I would also like to thank the entire faculty and staff of the Department of Computer and Information Sciences. With the solid theoretical foundation they gave me, workflows were easier to practice.

I am grateful for the guidance and mentorship of the entire technology department of Interswitch, notably Mr. Victor Ogbo, Mr. Olusesan Ibrahim, and Miss Sonia Atuchukwu, who in spite of being extraordinarily busy with their duties, took time out to hear, guide and keep me on the correct path.

Finally, I acknowledge every single individual who contributed to the growth of my career and skillset in diverse ways during this period. I am sincerely indebted to them for the knowledge they all have impacted me.

## **ABSTRACT**

This report covers my work experience at Interswitch, which started on March 7th, 2022 and ended on August 19th, 2022 (24 weeks).

It will provide an overview of the Company's work ethics, processes, workflows, resources, facilities, and equipment used to foster business standards, as well as my activities, challenges faced, contributions made, observations noticed, and experiences gained.

During my internship, several concepts and techniques were applied including managing an entire system, thorough consultation of relevant materials, and a question and feedback approach. This served as an opportunity to develop and enhance professional skills and competencies in my career field, which I achieved.

In summary, this report provides explicit information on the application of theories learnt in school for the last three years.

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## **CHAPTER ONE: INTRODUCTION**

### **1.1 STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)**

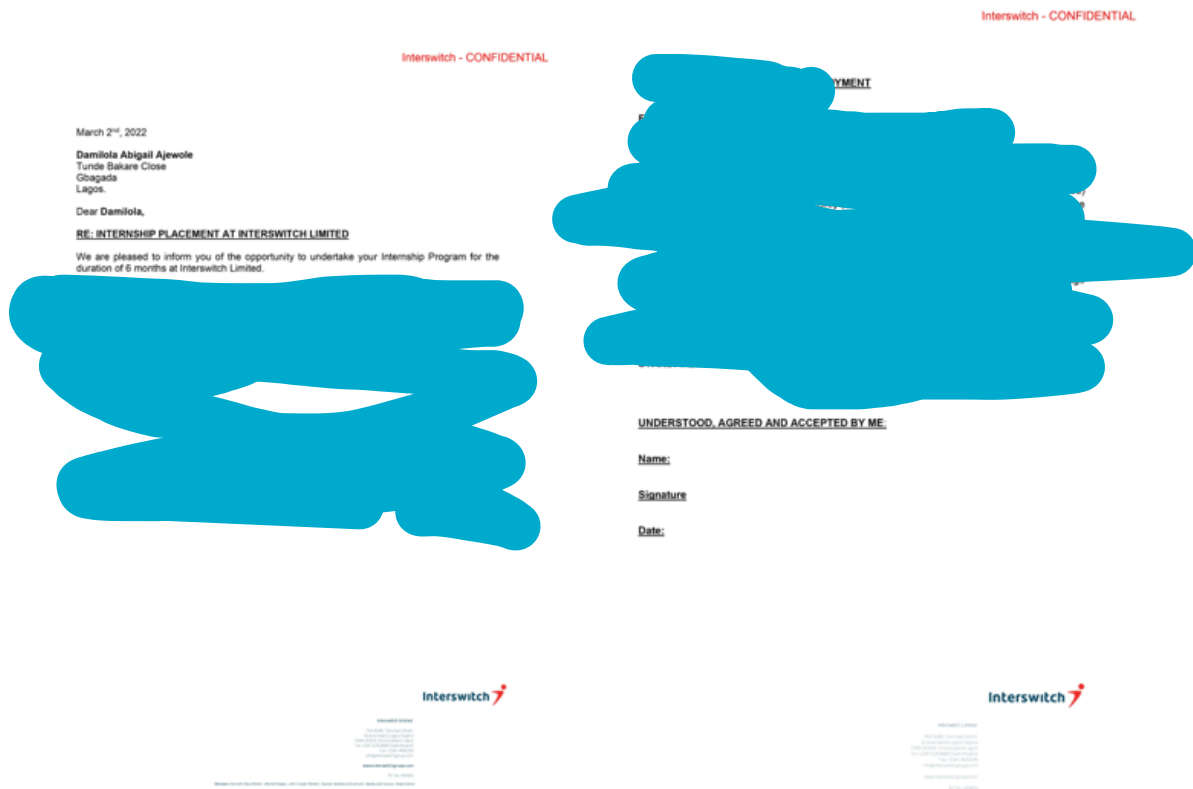
The Student Industrial Work Experience Scheme (SIWES) is an accepted skills program introduced by the Federal Government of Nigeria in 1974 under the Ministry of Education via the Industrial Training Fund designed to bridge the gap between the classroom and the industry. All students in the Sciences needed to undertake six months of Industrial Training. The aims and objectives include;

- Help students develop skills and techniques directly applicable to their careers.
- Expose students to work methods and techniques in handling equipment and machinery that they may not otherwise have access to.
- To prepare students for post-graduation work scenarios.
- To give students the chance to put their theoretical knowledge into practice in real-world circumstances, bridging the gap between theory and practice.

#### **1.1.1 RECRUITMENT PROCESS AND ACCEPTANCE**

At the end of the Alpha semester, February 2022, the SIWES letter of placement, logbook and necessary forms were handed to students at school. Upon receiving the required documents, I sent my SIWES letter, resume, and other relevant information to Information Technology-based organizations like Interswitch, Cowrywise, Piggyvest, MTN, and Nigerian Breweries. After many applications, a series of emails, phone calls, and physical interviews, I was accepted at the Interswitch Technology department as a Technical Support Engineer Intern on a six-month contract.





*Figure 1: Internship Contract Agreement*

## 1.2 COMPANY INTRODUCTION: INTERSWITCH

Interswitch is a leading African integrated payment and digital commerce platform company that facilitates the electronic circulation of money as well as the exchange of value between individuals and organizations on a timely and consistent basis.

Headed in Victoria Island, Lagos, this firm provides exceptional solutions in technology integration, advisory services, transaction processing, payment infrastructure, financial inclusion, payment cards & digital tokens, and digital infrastructure & managed services for both individuals and forward-leading clients such as Jumia, Line3, and Opay.

Founded in 2002 in Nigeria by Mitchel Elegbe, as a transaction switching and processing company with a national focus, Interswitch progressively evolved to incorporate consumer financial services with the successive launches of Quickteller, a retail payments ecosystem linking merchants and billers with consumers, as well as Verve, a homegrown, EMV-certified payments card scheme.

Their product and services are Quickteller, Verve, and Quickteller Business.



*Figure 2: CEO of Interswitch, Mitchel Elegbe*

### **1.3.1 COMPANY'S MAJOR SERVICES**

Interswitch's significant services, Quickteller and Verve, are FinTech services that have evolved Interswitch into an integrated payment services company, building and managing payment infrastructure as well as delivering innovative payment products and transactional services throughout the African continent.

Quickteller is a robust consumer platform that offers digital payments and e-commerce services for convenient Airtime Recharge, Funds Transfer, Bill Payments, global shopping, and much more!

Verve International is a Nigerian Pan-African and multinational financial technology and payment card brand owned by Interswitch Group. Verve offers card products in Nigeria. In 2013, Verve was reported to have "over 20 million cards in circulation and access over 119,631 points of sale, 11,287 ATMs and over 1,000 online merchants.



*Figure 3: Interswitch's Major Services*

### **1.3.2 MISSION AND VISION STATEMENTS.**

Mission - To create transaction solutions that enables individuals and communities prosper across Africa.

Vision - An Africa where payment is a seamless part of everyday life.

### **1.3.3 INTERSWITCH INTERNSHIP POLICY**

The internship Programme provides hands-on work experience from day one, providing students with the opportunity to work directly with inspiring and experienced professionals. The insights and skills gained by the end of the Programme would be invaluable for future careers. A supervisor would be given to the intern to guide the learning process and meet the goals set in the timeline.

### **1.4 SUBMISSION OF ACCEPTANCE LETTERS**

I sent an email containing the acceptance letter given by the Talent Management Team of Interswitch to the Covenant University SIWES email address:

[siwescu@covenantuniversity.edu.ng](mailto:siwescu@covenantuniversity.edu.ng), on March 9<sup>th</sup>, 2022, in which I received a feedback email

acknowledging on March 11<sup>th</sup>, 2022. On March 9<sup>th</sup>, 2022, I submitted my Student's Commencement of Attachment Form (SCAF) to the ITF Office located at Industrial Training Fund Office in ITF, 14-18 Elsie Femi Pearse St, Victoria Island 106104, Lagos.

## **1.5 COMMENCEMENT OF INTERNSHIP**

I officially commenced the internship on March 14<sup>th</sup>, 2022, after a 1-week onboarding session (Switch School) with the company which started on March 7<sup>th</sup>, 2022, and ended on March 11<sup>th</sup>, 2022. During the Switch School, we were taught on the Culture Transformation of Interswitch and the business ecosystem of Interswitch. Afterward, I was introduced to my team (Technical Support) and had my tasks as a Technical Support Engineer Intern explained to me. The tasks were:

- To perform real-time monitoring of all business-critical components (3rd party services/connections, Interswitch In-App services, transactions, applications)
- Issue resolution and providing technical support to external customers (Banks, telcos, numerous billers, Fintechs etc.) by attending to tickets logged via the CRM portal/complaints received via phone calls/emails to resolve service incidents.
- Troubleshooting application software and server incidents, finding the root cause, creating knowledge-based documents on steps taken during resolution, and ensuring a sustainable incident response has been implemented to prevent future occurrences.
- Analyzing the architecture of systems and applications to understand dependencies, points of failure, impacts, and external and internal interfaces, to provide and implement monitoring recommendations for system and infrastructure and time estimates.
- Monitoring the performance and capacity of servers (Windows, Linux OS), databases(SQL Server, MongoDB), storage, services, and network links, using a variety of tools like Nagios, SQL Monitor, Vcenter VMware, Solarwinds, Appdynamics, Grafana, and Kibana.
- Contributed to the success rate of transaction processing and settlements by ensuring uptime and swift recovery of all Postilion real-time/office servers, all web/mobile applications, and other financial services.

- Creating and refining monitoring procedures for applications and services which includes dashboard setup, creation of alerts etc.

## **CHAPTER 2: FACILITIES AVAILABLE**

### **2.1 FACILITIES AND TOOLS.**

Interswitch makes use of a series of maintained facilities within the office environment ranging from software facilities to hardware for business processes. These facilities include:

- Personal computers (Laptops): Interswitch has imbibed, a working policy of making sure employees utilize the company-specific and Official Laptops and computers for official use only. In that case, my company issued me a Lenovo Notebook, Corei5 for work purposes only.



*Figure 4: Personal Computer*

- ii. Network and Security: Due to the type of work done at my team, internet access and networking were extremely important as most of our monitoring occurred on web applications like Kibana and Grafana.

We have two internet providers, such as MainOne and IPNX.



*Figure 5: Internet Service Provider*

- iii. Communication Platform:

I. Microsoft Teams: Microsoft Teams is a collaborative workspace within Microsoft 365/Office 365 that acts as a central hub for workplace conversations, collaborative teamwork, video chats, and document sharing, all designed to aid worker productivity in a unified suite of tools. Due to the hybrid work schedule and size of the company, we were heavily dependent on Microsoft Teams to communicate with our colleagues. Interswitch employees also used this to hold daily catch-up meetings, trainings, GMD-Connect Meetings and to place calls during escalations and resolutions.

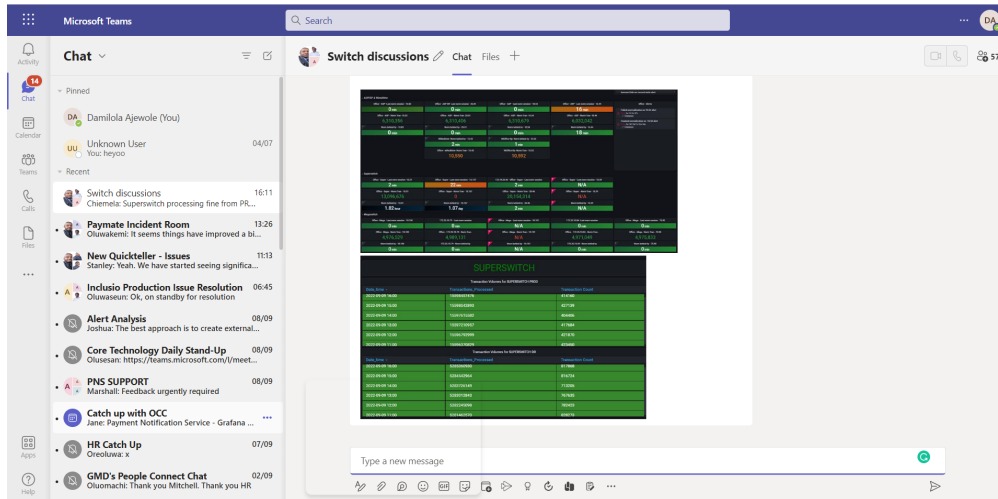


Figure 6: Microsoft Teams

II. Microsoft Outlook: Microsoft Outlook is an information manager web app from Microsoft consisting of webmail, calendaring, contacts, and tasks services. This web application was used to communicate by means of emails, with other staff, clients and customers of Interswitch.

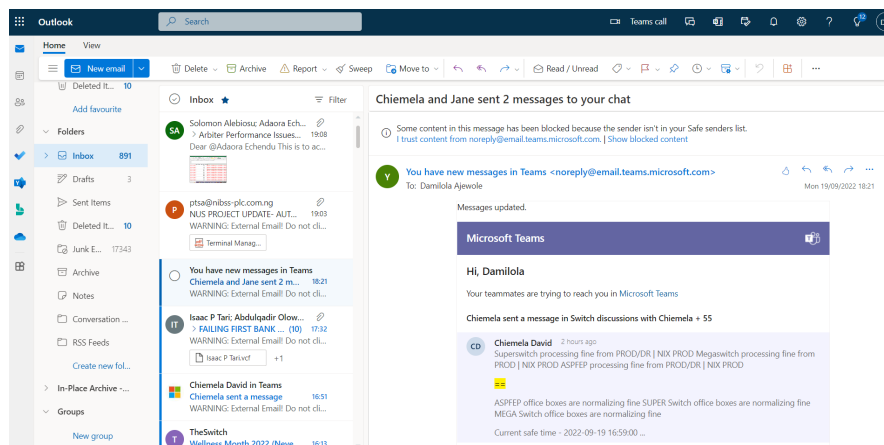


Figure 7: Microsoft Outlook

#### iv. Monitoring Applications:

I. Kibana: This software application is a source-available data visualization dashboard software for Elasticsearch, whose free and open source successor in OpenSearch is OpenSearch Dashboards. In my team Technical Support, this application was used to monitor real-time transactions from national banks, microfinance banks, and international clients through data visualization and exploration tools.

Asides from monitoring transactions, Kibana was used to monitor servers, interchanges, and interfaces. Whenever a disconnect occurred in a server, it was flagged on the dashboard, thereby notifying us.

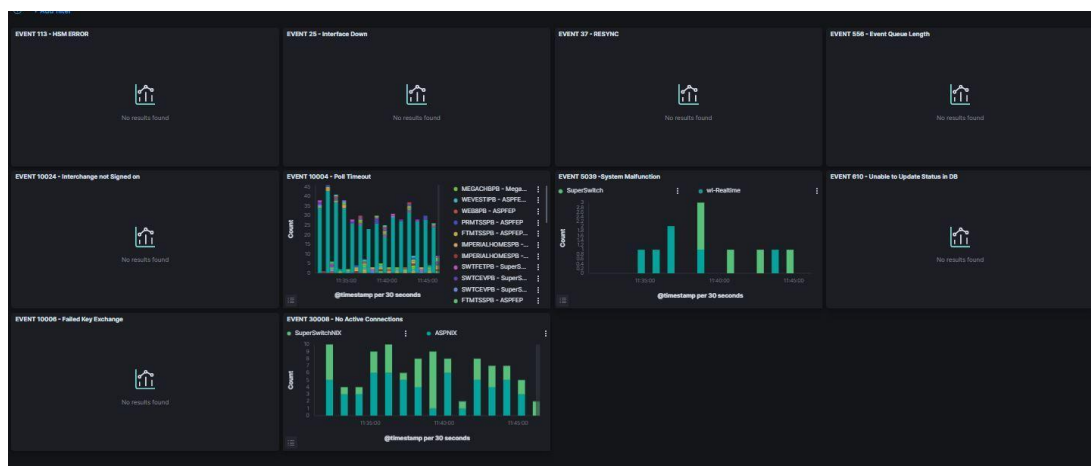


Figure 8: Kibana Dashboard

II. Grafana: Grafana is multi-platform open source analytics and interactive visualization web application. It provides charts, graphs, and alerts for the web when connected to supported data sources. I used this data visualization tool alongside Kibana to monitor transactions, PNS (Payment Notification System) alerts, and other important server alerts.



AMQ-DB-01	AMQ-DB-02	AMQ-DB-03	COLLECTIONS-DB-01	COLLECTIONS-DB-02	COLLECTIONS-DB-03
OK	OK	9	OK	OK	9
REPSVR-01	REPSVR-02	ETLREPOR1	ETLOADER-01	ETLOADER-02	ETLOADER-C
OK	OK	OK	9	OK	OK
TRF-DB-1A	TRF-DB-1B	REPSVR-DB-03	FMS-DB-01	FMS-DB-DB-04	ISWLOS-FMS-DB
OK	OK	OK			
SCS-DB-1A	SCS-DB-1E	TRF-DB-1C	DB20-A	DB20-B	DB20-C
OK		OK	OK	OK	OK
SURCHARGE-02	SURCHARGE-04	SCS-DB-1D	DB20-B	DB20-C	DB20-D
OK	OK	1	OK	OK	OK
FINCHQA	FINCHQB	SURCHARGE-DB-C	DB24-A	DB24-B	DB24-C
OK	1	OK	OK	OK	OK
DB31-A	DB31-B	FINCH2-DB-01	FINCH2-DB-02	DB33-A	DB33-B
OK	OK	OK	OK	OK	OK
DB17-A	DB17-B	DB31-C	DB15-B	DB33-C	DB33-D
OK	OK	OK	OK	OK	OK
DB20-A	DB20-B	DB17-C	DB18-A	DB18-B	DB18-C
		OK	OK	OK	OK
DB20-C	DB20-D	DB24-A	DB24-B	DB29-A	DB29-B
		16	OK	OK	OK
DB20-A	DB20-B	DB20-C	DB21-C	DB29-C	DB29-D
6	OK	OK		OK	OK
DB37-A	DB37-B	DB37-C	DB37-D	DB35-A	DB35-B
OK	OK	OK	OK	OK	OK
CAESAR01	CAESAR02	CAESAR-DB-01			DB35-C
OK	OK	OK			OK

Figure 9: Grafana Dashboard

- v. Kubernetes and Linux: The Quickteller App cluster and Switch Cluster is hosted on Kubernetes, an open-source container orchestration system for automating software deployment, scaling, and management. At Interswitch, Kubernetes runs on top of Linux and interacts with pods of containers running on the nodes. Therefore, when running commands on the Kubernetes control panel, they are run in Linux.

Scorebridge  
REDIS CLUSTER NODES MANAGER

Node IP: 172.38.1.50

Port: 7005

Refresh rate: 5000

show node info

automatic master failover

replicate master node

Masters: 3

Slaves: 9

Show Cluster

Cluster Nodes:

Masters	Slaves
172.38.1.51:7006	172.19.46.237:701C
172.38.1.7:7001	172.19.46.236:7009
172.38.1.50:7005	172.19.46.189:7008
	172.38.1.49:7004
	172.19.46.238:7011
	172.38.1.8:7002
	172.38.1.9:7003
	172.19.46.188:7007

Output:

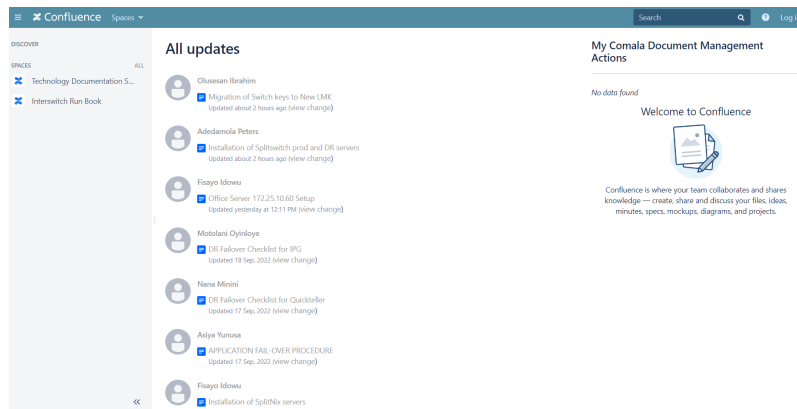
```

27eaece3cf6db0302408e1887738f7fe567f3033 172.19.46.236:7009 slave f74fc867bf55bb97c8c14cf040ecbee43861710b 0
1655123627816 20327 connected
7e80e21e6c85d1154075497cd650fa2662706f7f 172.19.46.237:7010 slave 84ed1998b1c9475c2e37111ef38985a74fe60e65 0
1655123626813 20330 connected
8bc0a3f9eb9a634febf6dc8073af71cdb6d70682 172.38.1.49:7004 slave 84ed1998b1c9475c2e37111ef38985a74fe60e65 0
1655123629769 20330 connected
fd87b228f8889fe0ba3006ad5f76da16e7430352 172.19.46.238:7011 slave f74fc867bf55bb97c8c14cf040ecbee43861710b 0
1655123630326 20327 connected
84ed1998b1c9475c2e37111ef38985a74fe60e65 172.38.1.51:7006 master 0 1655123631333 20330 connected 1092316383

```

Figure 10: Scorebridge Kubernetes Cluster

- vi. **Confluence:** Confluence is purpose-built for teams that need a secure and reliable way to collaborate on mission-critical projects. At Interswitch, confluence serves as a way for employees to document processes and methods used for solving a problem or working on a complex case in such a way that other employees can have access to it if they need to. For my role as a Technical Support Engineer, I had to work with complex servers and systems that I had never worked with before. To understand how to use it, I would go through documents written by employees who understood what to do and follow the step-by-step procedures.



*Figure 11: Interswitch's Confluence*

- vii. **Customer Portal:** Interswitch's customer portal is served as a technology for customer relationship management for their relationship with customers, clients, and potential customers with the goal of improving business relationships. While working, I used this portal to handle cases from customers that came into the Technical Support queue and properly resolve them, meeting the required quality assurance.

Operations Command Center Active Cases ▾

✓	Case Title	Case Number	Case Priority	TTR	Resolve By SLA Status
	RE: FAILING KEYSTONE BANK TRANSACTIONS	ISW-2648385-G35959			In Progress
	Returned mail: see transcript for details	ISW-2648378-X4Q6T4			In Progress
	Re: FAILING UNION BANK TRANSACTIONS	ISW-2648368-N4T4Q6			In Progress
	VERVE DEBIT CARD: PAN GENERATION ISSUE - BAOBAB ...	ISW-2648360-B1M4M4			In Progress
	RE: FAILING FIDELITY BANK TRANSACTIONS	ISW-2648359-Q6T6S9			In Progress
	Ticket Closed - SERVICE NOTIFICATION222089	ISW-2648352-G3W9L8			In Progress
	Receipt of dispute request	ISW-2648341-G5N0G8			In Progress
	Failure Notice	ISW-2648329-G1T8G5			In Progress
	Failure Notice	ISW-2648330-B5S6V2			In Progress
✓	Failure Notice	ISW-2648331-X1Y4T3			In Progress
	Email Delivery Failure	ISW-2648324-G7Z0Z4			In Progress
	Ticket Received - SERVICE NOTIFICATION #222089	ISW-2648325-R8Q7C2			In Progress
	This e-mail address is no longer in use	ISW-2648326-Q4J1T2			In Progress
	Failure Notice	ISW-2648327-G3H6T6			In Progress
	Automatic rebo SERVICE NOTIFICATION	ISW-2648328-V8F9W4			In Progress

1 - 50 of 79 (0 selected)

Figure 12: Customer Portal

- viii. SSMS (SQL Server Management Studio): SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure, from SQL Server to Azure SQL Database. SSMS provides tools to configure, monitor, and administer instances of SQL Server and databases. At Interswitch, we used SSMS to deploy, monitor, and upgrade the data-tier components used by Quickteller applications, and build queries and scripts. SSMS was used to query, design, and manage databases both on-prem and in the cloud.

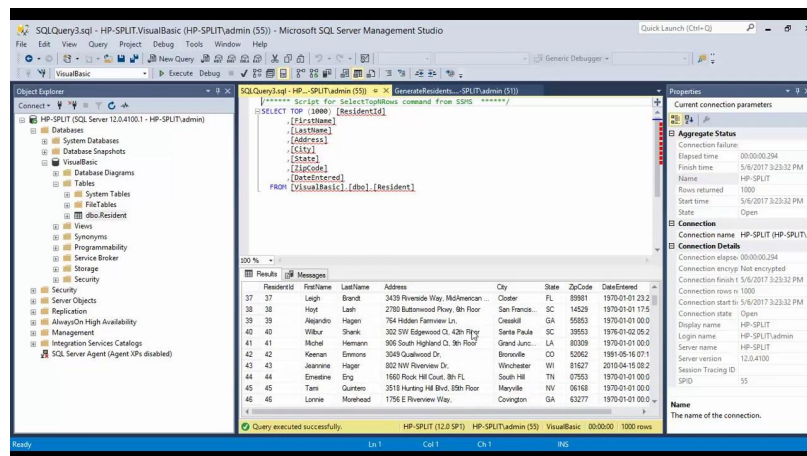


Figure 13: SSMS (SQL Server Management Studio)

- ix. Fortinet FortiToken: FortiToken Mobile is an application for iOS or Android that acts like a hardware token but utilizes hardware the majority of users possess, a mobile phone. Due to the amount of sensitive and important data I was handling, I had to use this app to sign into the remote desktop where I would have access to applications used to view and modify extremely sensitive content.

## **2.2 QUALITY OF COMPANY-BASED SUPERVISION**

Upon joining Interswitch, my supervisor was my team lead, who was also the Head of Command Center, Core Technology - Mr. Victor Ogbo. As the Head of Command Center, he was involved in almost all the activities in the Technology Department such as networking, information security, site reliability engineering, DevOps, and Database.

Under his amazing supervision, I learned a lot about data visualization, application monitoring, load balancing, database management, and soft skills like teamwork, proper communication and issue resolution. Besides from his supervision work, he was very keen on my growth and progress both as an employee but also as a person.

Being a member of the Technical Support Team, my roles were very alike to the roles of the full-time employees in my team but with less pressure on me. While in the team, I was opportune to work on projects given to me by a DevOps Engineer because I indicated an interest in DevOps.

My supervisor and fellow colleagues gave me courses to follow that I would allow me to learn more about what I was doing. I worked on various Cloud AWS Projects from an Udacity Cloud Computing course, I learnt Linux basics to allow me to run better commands on our systems. I took out time to understand the basics of containerization through Docker and Kubernetes and the basics of switching and routing in networking.

## 2.3 WORK DONE AND KNOWLEDGE GAINED

The skills one acquires from the knowledge of computer science encompass all areas of life. Every operation or daily activity in the industry requires analytical thinking with a problem-solving mindset to be resolved.

The Team I was fortunate to work with increased my knowledge of the information technology world and operations innovations. The internship programme was a continuous learning process. Every day there was something new to learn if you were ready to, and to me, this was the most exciting. The knowledge gained can also be divided into technical (hard skills) and non-technical (soft skills).

### 2.3.1 TECHNICAL SKILLS

- i. *Data visualization and monitoring:* My role as a Technical Support Engineer made me work with servers and systems used by Interswitch. This then included tracking and logging events or errors and application monitoring - Quickteller App. I then learned to understand the architecture of systems used by Interswitch and the intricacies of the data coming in. I also used Grafana to monitor the normalization and settlement sessions occurring on each server.
- ii. *Containerization with Docker:* To properly understand the platform on which the Quickteller app was built and the platform on which Interswitch systems run, I had to learn containerization with Docker. It enables developers to package applications into containers—standardized executable components combining application source code with the operating system (OS) libraries and dependencies required to run that code in any environment.
- iii. *Kubernetes and Linux:* While at Interswitch, I worked with both the Switch and App Cluster. The Switch Cluster consists of every real-time transaction going through ‘The Switch’, settlements and normalizations. While the App Cluster refers to every single

Quickteller activity. These systems are ultimately run on Kubernetes, a software for automating deployment, scaling, and management of containerized applications. To work with these systems, I had to learn how to run Linux commands on the Kubernetes platform and also the basics of a Kubernetes system.

- iv. *Database monitoring:* I worked with multiple types of databases in Interswitch. I had to learn SSMS to properly query data. For normalizations and settlements, these sessions occurred in office boxes (databases) and I had to understand how to use and navigate a database to understand how these systems worked.
- v. *Customer Relationship Management:* It is a software system that helps business owners easily track all communications and nurture relationships with customers and clients. As part of my role as a Technical Support engineer, I was put in charge of handling and resolving cases that came into our portal. This also enabled me to develop my communication skills, also to understand the relationship between what I do and how to adversely affects customers.

### **2.3.2 SOFT SKILLS**

- i. *Communication Skills:* Being able to communicate effectively is perhaps the most important of all life skills. It is what enables us to pass information to other people, and to understand what is said to us. At the start of the internship, I learned how to conduct myself in a business setting and communicate properly. To speak as clearly as possible as receive feedback on the work by asking the right questions. To communicate early enough any issues or availability at work for any reason whatsoever.

- ii. *Problem Solving*: Problem-solving is another soft skill that I developed as it was essential in the workplace. No matter what project I was to do, being able to solve problems quickly and efficiently is a valuable asset.

This skill allowed me to be able to see the big picture and identify the root cause of any issue. I also developed the ability to think on my feet and come up with creative solutions to whatever problem was presented my way.

- iii. *Teamwork*: I learnt how to cooperate with company members and how to spark team synergy and creativity to produce results. I understood how each person's job relies on one another, and teamwork aligns everyone's results to support the primary goal.

- iv. *Leadership Skills*:

Leadership skills are the ability to inspire and motivate others. People who have strong leadership skills are able to take charge of a situation, delegate tasks and build teams effectively.

When new members joined our team, I was sometimes appointed to be a 'buddy' to them - that included leading them through their new roles and being there for any questions they might have. After a while, I was also chosen to lead a training on Customer Relationship Management for all my other colleagues. This allowed me to practice my leadership skills as well as learn interpersonal skills.

- v. *Flexibility*: As a Technical Support Engineer at Interswitch, I had to do a lot of tasks that I didn't have prior knowledge of but I had to learn on my feet. This enabled me to develop flexibility and adaptability quickly, also due to the extremely fast-paced environment. Being flexible enabled me to be able to take on new challenges and develop new skills quickly.

- vi. *Customer Relations*: Customer relations refers to the methods a company uses to engage with its customers and improve the customer experience. During my internship, I had to work with Interswitch's customers and clients to ensure the proper resolution of issues.

### **CHAPTER 3: CONTRIBUTIONS OF KNOWLEDGE GAINED**

#### **3.1 CONTRIBUTION TO THE FIELD OF STUDY AND EDUCATIONAL CAREER**

Interswitch as a company is involved in different aspects of Finance and Technology. From Payment Solutions to Software Engineering and DevOps, the possibilities of technology is unlimited. During my internship there, I worked as a Technical Support Engineer Intern and was also privileged to work on various projects with a DevOps Engineer because I took interest in the field. I was given the privilege to work with different technologies during my stay in the



company. I would say that working with these technologies has greatly impacted my view on the world of technology and its capabilities. I must admit, before the commencement of my internship I was very limited in my knowledge of opportunities out there in the world of tech. But after this internship, I have been properly exposed and have more knowledge of the different career paths available for Computer Science students.

I was exposed to the world of Networking, databases, containerization, deployments, and Cloud Computing, all necessary skills needed to become a DevOps Engineer. Through the resources given to me and the people I was fortunate to connect with, I was able to learn some important concepts in different fields and how they apply to the architectural structure of the applications run by the company as a whole. I was also able to explore my interest in Cloud Computing and AWS through Udacity's nanodegree in 'Cloud Computing'.

With this knowledge of networks and DevOps, and an understanding of the need for processes, tools, and methodologies to balance needs throughout the software development cycle, from coding and deployment to maintenance and updates, I believe this internship was very empowering, acting as another step to the pursuit of a career in Computer and DevOps.

### **3.2 CONTRIBUTION TO INTERSWITCH'S GOALS**

In line with Interswitch's goals, I was able to work with my team effectively and efficiently. Despite changes in tasks, team members, and workflows, I adapted to the situation and produced results with my team. The knowledge I gained during this experience to attend to specific assignments and produce results supported Interswitch's goals and success.

### **3.3 CONTRIBUTION TO SOCIETY.**

My tasks at Interswitch constituted monitoring real-time transactions between national banks, international banks, and microfinance banks. The majority of the interbank payments that occur in Nigeria pass through the 'Switching' of Interswitch.

Whenever an error occurred, my job was to notify the bank responsible for the error about the error whenever fault was from the bank. But when the fault came from us, my job was to enter

into the server, check the affected interfaces and interchanges, restart the system, and perform commands to set sign-on commands.

This affected society in that the success rate of transactions made nationally was dependent on my team and I, so we had to be focused on recovering and monitoring servers in charge of processing transactions.

### **3.4 BRIDGING THE GAP IN KNOWLEDGE**

The internship was the application of the past years of studies and theoretical understanding. From the courses in my third year, like Networking, Management Information Science and Computer Architecture till recent classes, all had their uses when the time came. Several tasks I did require a solid understanding of networking, data management, and information security. These were covered extensively in classes like MIS – High-Performance Computing and Database Management, easing the process of actively manipulating and performing analysis on data, as well as CSC 310 – Internet Programming and CSC 317 – Research Methods. It would have been challenging to navigate without the prior knowledge from the course material taught. The SIWES program has enabled me to effectively use these technical skills and understand how to apply them within a business setting.

With this in perspective, I believe the SIWES program is a critical initiative that has enabled other students and me nationwide to prepare for our career paths and life beyond the classroom.

### **3.5 WORK CULTURE AND EXPERIENCE**

Diligence and hardwork were the qualities valued by Interswitch. They made it a point of importance to recognize and compensate their hardworking employees to encourage a culture of diligence and hardwork. This environment caused me to take responsibility in my personal learning to develop my skills and have a deeper understanding of my function so as to properly work and effect change.

Also, to reduce any tension or discomfort that may come when addressing our supervisors, they had a policy where the employees are encouraged to call each other by their first name regardless of position. This really helped me as a new intern to communicate effectively with my superiors. Because I was not afraid to voice my opinions or ask questions, I was properly corrected when I made incorrect observations and this enabled me to learn a lot.

The company ensured that the requirements and conditions for workers to work comfortably were prioritized and quickly acted on. It was indeed a delightful experience and has left its mark on the pursuit of my degree.

### **3.6 CHALLENGES FACED**

Although it was a wonderful experience yet there were still lessons to be learned. When I first started working here, I ran into problems. I now understand that everything was a necessary part of the process, and overcoming these challenges has contributed to my career and personal growth. The challenges encountered were:

- i. *Unfamiliarity with some Technologies*: As some aspects of Technical Support, monitoring the performance and capacity of servers (Windows, Linux OS), databases(SQL Server, MongoDB), storage, services, and network links, tools used to monitor the servers I was working with were not familiar to me, I had to go beyond work hours to do personal research and take some courses to fully understand what I was working with.
- ii. *Working Under Pressure*: Because I was always working with real-time data, I had to be extremely fast on my feet when working. Whenever failures occurred, there was a lot of pressure on my team to quickly investigate and resolve the issue as any failures meant Interswitch was losing money. Although there was a lot of pressure when I initially joined the team and was still getting accustomed to the procedures, it subsided after a few months of working and learning what to do when issues emerged.
- iii. *Time Management*: Besides from monitoring servers, I was given several projects to work on by various members of the Technology department. I then had to balance my duties

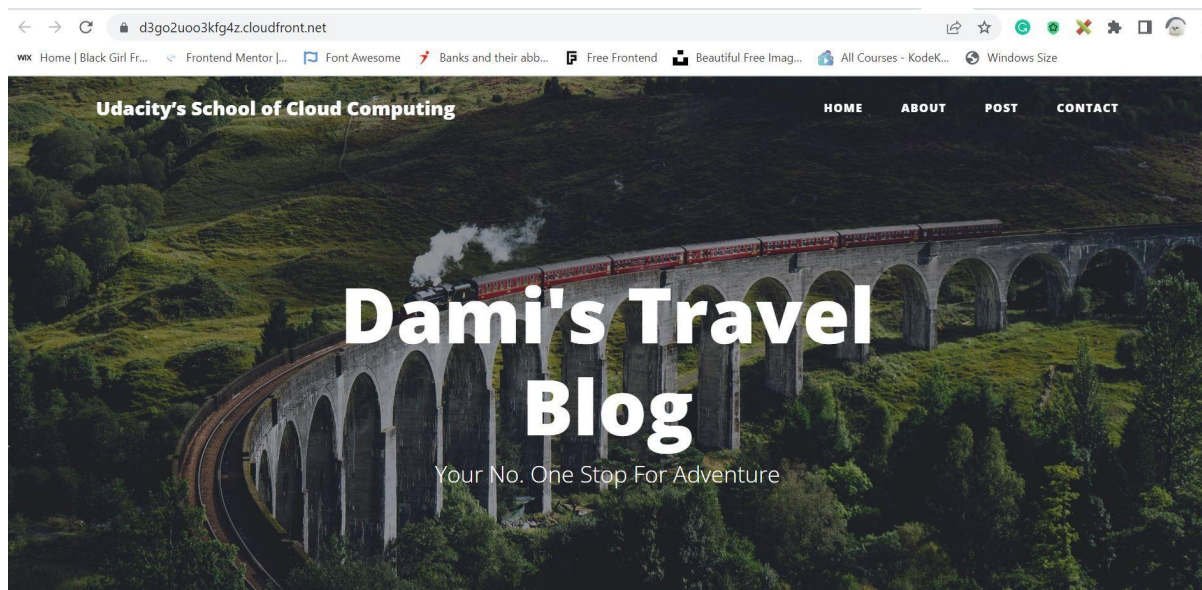
with the side projects I was working on and I struggled with efficiency and was unable to meet some deadlines of the projects.

### **3.7 PROJECTS AND OTHER NOTABLE ACHIEVEMENTS.**

In line with my actively practicing my technical skills and the deliverables assigned to me, I was able to take on projects. I was involved in participating in pieces of training as well.

#### **3.7.1 HOSTING A WEBSITE ON AWS**

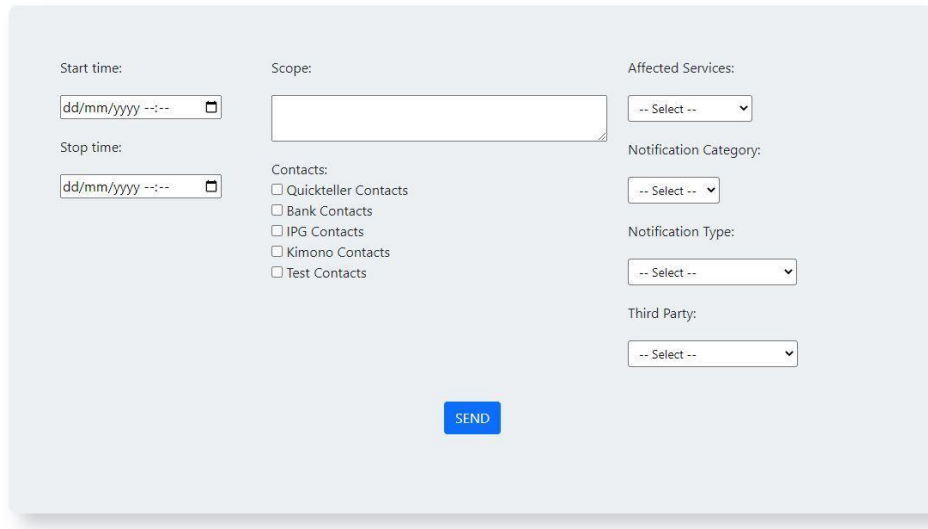
To further my knowledge of AWS services, I was able to work on an Udacity project where I was to deploy a static website on AWS. To do this, I created an S3 bucket, configured it for web hosting, and secured it using IAM policies.



*Figure 14: Udacity Website Project*

### 3.7.2 PYTHON FLASK PROJECT

I worked on the UI of a flask web app made to automate sending service notifications and recovery emails to clients and customers



The screenshot shows a web form with the following fields and controls:

- Start time:** A date and time input field with a placeholder 'dd/mm/yyyy --:--' and a calendar icon.
- Stop time:** A date and time input field with a placeholder 'dd/mm/yyyy --:--' and a calendar icon.
- Scope:** A large text input field.
- Affected Services:** A dropdown menu with '-- Select --' as the placeholder.
- Notification Category:** A dropdown menu with '-- Select --' as the placeholder.
- Notification Type:** A dropdown menu with '-- Select --' as the placeholder.
- Third Party:** A dropdown menu with '-- Select --' as the placeholder.
- Contacts:** A section with four checkboxes:
  - ☐ Quickteller Contacts
  - ☐ Bank Contacts
  - ☐ IPG Contacts
  - ☐ Kimono Contacts
  - ☐ Test Contacts
- SEND:** A blue button at the bottom center.

*Figure 15: Flask web app*

### 3.7.3 PIECES OF TRAINING OFFERED

I was able to hold a training on the Customer Portal used at Interswitch. This training was held to allow other staff have a deeper understanding of customer relationship management to better handle cases effectively.



*Figure 16: CRM Training on Microsoft Teams*

I also took a Linux course to deepen my understanding and increase my proficiency in the running Linux commands.



*Figure 17: Linux Certificate*

## **CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS**

### **4.1 CONCLUSION**

The entirety of this internship was an eye-opening experience. I was tasked frequently with public speaking, research work and in-depth understanding of the technicalities of customer relations and devOps. Attempting and delivering on the different jobs assigned to me has profoundly boosted my confidence, experience, and added value.

I have learnt the importance of work ethic, business culture, diligence, and how it all sums up to produce effective results. In addition, I understand the worth of my input in any situation and the effective way to communicate it. These are all priceless values and experiences that have shaped my walk in the pursuit of a degree and will guide me as I enter the workforce in the future.

### **4.2 RECOMMENDATION**

The SIWES program efficiently creates a deeper understanding of business culture and bridges the gap between the classroom and the business world.

This initiative has genuinely helped me, and I believe it will help others. In light of this, universities should allow for more frequent integrations into the business setting, enabling students to work, gain valuable experiences, and still get their degree, allowing them to be job-ready as they leave the academic environment.

## References